

SEROV, Nikolay Vasil'yevich; SHLYCHKOVA, A.I., red.; SUBBOTINA, G.M.,
tekhn.red.

[Beekeeping] Pchelovodstvo. Novosibirsk, Novosibirskoe
knizhnoe izd-vo, 1959. 131 p. (MIRA 14:2)
(Bee culture)

SOKOLOV, L.S.; IVANOV, I.I.; SHLYCHKOVA, N.S.; YANCHUK, A., red.;
LIL'YE, A., tekhn.red.

[Brief review of the subways of the world]Kratkii obzor me-
tropolitenov mira. Moskva, 1958. 115 p. (MIRA 15:11)

1. Nauchno-tekhnicheskoye obshchestvo moskovskogo metropolitena
im. V.I.Lenina. 2. Tekhnicheskiiy otdel moskovskogo metropolitena
im. V.I.Lenina (for Sokolov, Ivanov, Shlychkova).
(Subways)

PROCEEDINGS AND PRESENTATIONS
 The action of potassium and calcium chlorides on the
 respiratory metabolism of nerves. S. N. Kaganovskaya
 and A. G. Shukova. *Compt. rend. acad. sci. U. R. S. S.*
 1, 250 (iii German 260-1) (1935).—The effects of KCl
 and CaCl₂ on the respiratory metabolism of the isolated
 frog sciatic nerve were detd. The O₂ consumption in KCl
 is about 30% lower than in Ringer soln. In CaCl₂, the
 respiration of the nerve is either unchanged or increased
 about 10%.
 R. P. Walton

ASH S.A. METEOROLOGICAL LITERATURE CLASSIFICATION

The platinum electrode. 1. The capacity of platinized platinum in different electrolytes and the electromotive behavior of adsorbed hydrogen. A. Shluigin and A. Frumkin. *Acta Physicochim. U. R. S. S. R.* 3, 791-818 (1935) (in German). The relation between the p. d. of the metal to the soln. of a platinized Pt electrode and the quantity of current sent through it was measured in the interval between the potential of the H electrode and an anodic polarization of about 1 v. in H_2SO_4 , HCl , KOH , HBr , Na_2SO_4 , $NaCl$ and $NaBr$. The electrode was satisf. with H until it reached a const. potential, then the H was replaced with N_2 . The potential was deid. against a normal electrode by the compensation method. Curves similar to those previously reported were obtained (C. A. 28, 1967). First there is a region in which desorption of the adsorbed H takes place, then a region of rapid change in potential (double-layer region), and finally oxidation of the electrode takes place. In alk. solns. the sepn. between the different parts of the curve is insignificant and the desorption of the H extends to the beginning of the oxidation. The capacity of the electrode (the quantity of electricity in coulombs consumed in the region in which desorption of H takes place) increases slowly with the quantity of Pt sponge. A limiting value for the capacity was not reached. Platinizing at high c. d. gave a black Pt which was not as highly dispersed as the gray Pt and did not have as high a capacity. The capacity decreases with time. From the form of the curves, the form of the

adsorption isotherm in the presence of electrolytes of H on Pt can be deduced. In acid solns., the quantity of adsorbed gas is directly proportional to the log of the gas pressure. The tenacity with which the H is held increases in the order $HBr > HCl > H_2SO_4 > KOH$. The possible significance of this relation to the structure of the adsorbed H layer is discussed.

E. R. Rushton
Calculation of the capacity of a lead storage battery by partial discharge to an optional tension limit (stress end); the change of the capacity curve with temperature. M. Rabl. *Z. Elektrochem.* 42, 114-20 (1936); cf. C. A. 29, 2840.

The capacity formula $C = \frac{C_{max}}{1 + a \exp \left(\frac{U - U_0}{b} \right)}$ is used in a graphic method to compute the capacity value by assuming a definite terminal voltage. The data and examples given indicate the effect of temp. change on the constants C_{max} and a ; also the ease with which all capacities and voltage values can be calcd. for a given temp. change.

W. George Parks

AS 55.4 METALLURGICAL LITERATURE CLASSIFICATION

E 2

MATERIALS INDEX		PROCESS AND PROPERTIES INDEX	
SUBJECTS		SUBJECTS	
<p>Platinum electrode. II. Adsorption properties of the platinum electrode. A. Shlygin, A. Frumkin and V. Medvedevskii. <i>Acta Physicochim. U. R. S. S.</i> 4, 911 (1948) (in German). <i>cf. C. A.</i> 30, 40089. In salt solns. the alkali adsorption is little affected by anodic polarization. The induction period is much longer in alk. than in acid solns. In acid, NaBr-NaOH and Na₂SO₄-H₂SO₄ solns. alkali is replaced by acid with further polarization. The converse change takes place in alkali and alkali-salt solns. The shape of the adsorption curve is explained by assuming that the acids and H atoms affect the metal-soln p.d. in the pos. direction. The bath. of the electrode surface with H leads to increase of metal-soln. p.d. and reduction in capacity of the double layer. Amts. of adsorption are in general parallel to the amts. of electricity. Changes due to slow oxidation were also observed. III. Adsorbed atoms and ions on the surface of the platinum electrode. A. Frumkin and A. Shlygin. <i>Ibid.</i> 5, 810 (1949) (in English). <i>Full and at U. R. S. S.</i> <i>Chim. i. math. nat.</i>, No. 10, 1936, 1937. Curves show p.d. and adsorption as affected by changing content, soln. compn. and electrode area. By use of these the relation between adsorbed H and the thermodynamic p.d. can be calculated. A differential equation is derived enabling the calcn. of adsorption curves from the charging curves made at 2 different p.d. values. George M. Evans</p>		<p>2</p>	

SHLYGIN, A.

600

1. SHLYGIN, A.; REZURCOVSKAYA, E.; ROZENTAL', K.
2. USSR (600)

"The Platinum Electrode," Part VII. "The Effect of Poisoning on the Capacity of a Platinum-Plated Electrode," Zhur. Fiz. Khim, 13, No. 8, 1939. Moscow, MGU, Electrochemical Laboratory. Received 9 February 1939.

Report U-1615, 3 Jan. 1952.

SHLYGIN, A.

Relation of adsorptivity of a platinized platinum electrode to the
ion concentration of the solution. Izv.AN Kazakh.SSR Ser.khim. no.3:
6-11 '49. (MLRA 9:8)
(Adsorption) (Electodes, Platinum)

ILYUSHCHENKO, V.; SHLYGIN, A.

Effect of arsenic on catalytic, adsorptive, and electrochemical
properties of platinized platinum. Izv.AN Kazakh.SSR Ser.khim. no.3:
12-23 '49. (MLRA 9:8)
(Arsenic) (Electrodes, Platinum)

ILYUSHCHENKO, V.; SHLYGIN, A.

Effect of atomic mercury on the adsorptivity and catalytic activity
of platinized platinum. Izv.AN Kazakh.SSR Ser.khim. no.3:24-32 '49.
(MLBA 9:8)

(Mercury) (Electrodes, Platinum)

MA

Electrometallurgy - 7

Study of the Sintering Process in Platinized Platinum by Electrochemical Methods. I.—Heat-Treatment in an Atmosphere of Hydrogen. M. I. Nikolaeva and A. I. Shlygin (*Zhur. Fiz. Khim.*, 1950, **24**, (4), 427-431).—(In Russian). A platinized Pt electrode was prepared by electrolytic deposition, and curves were taken showing its electrode potential in relation to the quantity of electricity which had passed through it, during the electrolysis of $N/10\text{-H}_2\text{SO}_4$ under an atmosphere of H_2 . Hence the effective surface area of the electrode for adsorption could be deduced. The same electrode was then used to catalyse the decompn. of H_2O_2 and the velocity const. of the reaction was measured. These measurements were repeated after the electrode had been heated in H_2 for 1 hr. at temp. from 40° to 300°C . The adsorption surface fell steadily with rising temp. of heat-treatment, except for a sudden drop at 80°C ., reaching 4% of the initial value after treatment at 300°C . The catalytic activity fell to 30% of the initial value after treatment at 60°C ., then rose to a max. at 80°C . and fell to 2-3% of the initial value at 300°C . N. and Sh. suggest that the catalytic activity is caused mainly by lattice imperfections, which disappear at temp. $<80^\circ\text{C}$., and that the subsequent fall in catalytic activity and adsorption surface is caused by recrystn. Their results differ from those of previous experiments, in which platinized Pt electrodes were annealed *in vacuo* with no effect on their activity at temp. below $350-380^\circ\text{C}$. (11, 11)

2

CA

Sintering platinumized platinum by electrochemical methods. II. Heat-treatment in air. M. I. Nikolaeva and A. I. Shlygin (Univ. Alma-Ata). *Zhur. Fiz. Khim.* 24, 534-8(1960); cf. *C.A.* 44, 8263d.—Platinized Pt was heated for 1 hr. at T° and cooled to room temp. Then it was either (a) treated with H in 0.1 *N* H_2SO_4 until complete reduction and electrolytically charged, or (b) cathodically polarized to det. the amt., x , of O adsorbed during heating, or (c) immersed in a H_2O_2 soln. to det. the const. k of the H_2O_2 decompn. (a) The charge required to achieve a given potential decreased almost linearly from 100% at $T = 20^\circ$ to 30% at $T = 400^\circ$. The sintering in air was much smaller than in H. (b) The x was 100%, 210%, and 60% at $T = 20^\circ$, 200° , and 400° , resp. The max. of adsorption at 200° was due to greater rate of adsorption. (c) The k was 100%, 34%, 127%, and 103% at $T = 0^\circ$, 100° , 300° , and 400° , resp. The increase of k was due to deformation of the Pt lattice by the O adsorbed.
J. J. Bikerman

PERMITINA, N.G.; SHLYGIN, A.I.

Electrochemistry of the adsorption of hydrogen on metals in presence of a liquid phase. Izv.AN Kazakh.SSR.Ser.khim. no.4:53-59
'51. (MLRA 9:5)
(Hydrogen) (Catalysts)

Shlygin, A.I.

3

(2)

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
Electrochemistry

Properties of mixed platinum-cadmium catalyst. B. M. Lopatukhin and A. I. Shlygin. Izvest. Akad. Nauk Kazakh. S.S.R. No. 101, 33-34 (1951). No. 4, 60-4 (1951).—
The Pd-Pt catalyst was prepd. electrochemically from PdCl₂-PtCl₂ soln. (100:1), and after cathodic treatment in H₂SO₄, the electrode was used in the usual H-electrode cell. The electrochem. behavior of adsorbed H on such electrode differs but slightly from that on pure Pd. However, the mixed catalyst had a much more developed surface, as shown by greater H and O adsorption. The mixed catalyst had high catalytic activity as checked in hydrogenation of methylethynylcarbinol as well as in decompn. of H₂O₂; it was 50 times more active than Pt in hydrogenation and 100 times more active than Pd in the decompn. of H₂O₂. The catalyst was not a mixt. of crystals of Pt and Pd but probably was a solid soln. of the metals. G. M. K.

LOPATUKHINA, B.M.; SHLYGIN, A.I.

Role of adsorbed hydrogen in the hydrogenation process. Izv.AN
Kazakh.SSR.Ser.khim. no.4:65-70 '51. (MIRA 9:5)
(Hydrogenation)

SHLYGIN, A. I.

USSR/Chemistry - Catalysts

Jun 52

"The Reactive Capacity of Hydrogen That Is Adsorbed in the Activated State," N.G. Permittina, A.I. Shlygin, Kishinev State U; Acad Sci Kazakh SSR

"Zhur Fiz Khim" Vol XXVI, No 6, pp 874-877

Using electrochem method for clarifying the mechanism of hydrogenation in the presence of a liquid phase, demonstrated that the total quantity of hydrogen adsorbed in the activated state is re-active toward methylethylacetylenecarbinol;

220T32

showed that there is inhomogeneity of the surface of platinumized Pt and, particularly that there is presence of 2 types of adsorption centers which differ sharply in activity. The more active centers have a low value of the adsorption potential toward hydrogen. Surface movement of activated adsorbed hydrogen taken place only to an insignificant extent. The substrate has an effect on the adsorption potential of the surface; the number of centers exhibiting the highest activity depends not only on the structure of the catalyst, but also the compn of the liquid phase.

220T32

SHLYGIN, A. I., PERMITINA, M. G.

Catalysis

Correlation of adsorption and catalytic processes during hydrogenation in the presence of a liquid phase. Zhur. fiz. khim. 26 No. 7, 1952.

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

SHLYGIN, A.I.

USSR

✓ Effect of lead admixtures on the adsorption properties of platinum black. A. I. Shlygin. *Uchenye Zapiski Kazansk. Gosudarst. Univ.* 7, 3-8 (1953); *Referat. Zhur., Khim.* 1954, No. 37488. The method used in this investigation was described earlier (cf. *C.A.* 30, 4028⁹). The reason for this investigation was that Pb salts were frequently added to the Pt-plating soln. in the prepn. of H electrodes. It was shown that the adsorptive capacity of an electrode in relation to H and the adhesion energy of adsorbed H dropped in the presence of Pb. The presence of Pb on the electrode increased its capacity to adsorb O and partly increased also the adhesion energy of the adsorbed O. Addn. of Pb did not essentially change the size of the true electrode surface but it decreased the rate of ionization and adsorption of H and the establishment of a reversible H potential. It was concluded that admixt. of Pb acted as poisoners of the H adsorption process and therefore the addn. of Pb salts to the plating soln. was not advisable.

M. Hosh

SHLYGIN, A. I.

USSR

Effect of specificity of some unsaturated organic compounds on their adsorption and catalytic properties. Shlygin and M. B. Manzhel. *Ochemy Zepishi Khim. Gosudarst. Univ.* 7, 13-19 (1953); *Referat. Zhur. Khim.* 1954, No. 37490. The adsorption and hydrogenation of dimethylacetylenic carbinol (I), allyl alc. (II), and cinnamic acid (III) in 0.1N NaOH on a Pt electrode was studied electrochemically. As electrode-catalyst, a platinized Pt strip with an apparent surface of 22 sq. cm. and a true surface of 6×10^4 sq. cm. was used. First, the charging curves of the electrode were obtained in order to det. its true surface and then the electrode was brought to a potential 0.5-0.6 v., compared to a H electrode, by anodic polarization in the given soln. Following that, the studied org. soln. was added to the cell and the change of the Pt potential with time caused by the adsorption of mols. on the electrode was detd. It was assumed that the change in potential ΔE was proportional to the no. of adsorbed mols. $\Delta n: \Delta E = K \Delta n$. From ΔE detns. over a period of time n , the no. of mols. adsorbed during this time period, can be found and from this curves of the relation of n and the time of contact of the soln. with the electrode could be drawn. To calc. n , it was necessary to know K which could be found from the shift of the potential and the quantity of adsorption of mols. at satd. adsorption. The value of satd. adsorption of mols. was detd. by expt. by electrohydrogenation. To this end, after the potential reached its satn. value, the org. substance was removed from the cell, the electrode was washed with an alk. soln., and the potential was brought to 0.0 v. by cathodic

1/2

On

hydrogen

polarization. The quantity of electricity in excess of that required to bring the potential of the electrode to 0.0 v. in the absence of org. mols. was spent on hydrogenation of the org. substance, and from this could be found the no. of reduced mols. and consequently also the nature of R. The adsorption capacity depended on the nature of the org. compd. For I the satn. adsorption was 1.55×10^{-7} , for II it was 1.35×10^{-7} , and for III 0.26×10^{-7} mols./sq. cm. of apparent surface. The rate of adsorption decreased in this order: II, I, III. To det. the rate of hydrogenation in the adsorbed layer the electrode was first satd. with H, the excess H was removed by passing purified N, and to the cell was added the org. compd. The rate of reduction of the latter was detd. from the change of the electrode potential with time (the potential shifted toward the anode side) by comparing these values with the charging curve obtained in the same soln. in the absence of the org. compd. The reactive capacity in relation to H decreased from I to II to III. The ratio between active adsorbed H and the total quantity of H on the surface of the electrode (detd. from charging curves) was detd. and was found to be from 28% (for III) to 49% (for I). From the quantity of active H was found the no. of active centers, and it was shown that it was different for the 3 studied org. compds. Consequently, it depended not only on the properties of the electrode surface but also on the nature of the hydrogenated substance.

2/2

q

M. Hosh

SHLYGIN, A.I.

Electrochemical study of the surface mobility of activated adsorbed gases. A. I. Shlygin and M. A. Kerdvarenko. *Uchenye Zapiski Kazanskogo Universiteta, Seriya Khimicheskaya, 1964, No. 3, 489-491. 11 refs.* The mobility of H and O on the surface of a Pt wire was studied by a method previously described. A new Pt wire was immersed in 0.1N H₂SO₄ and polarized up to 0.6 v. in relation to a H electrode in the same soln.; this caused the Pt surface to be completely free of adsorbed gases. Following this, the electrolyte was removed from the cell with a stream of N₂, the tip of the wire remaining immersed in the same soln., connected with the comparison electrode. To det. diffusion, the upper part of the wire was sealed with either O or H. Deviations of the potential of the wire's lower tip from 0.6 v. showed a movement of the gases from the upper part of the wire to the lower. During the measurements, N₂ was passed to prevent the passing of H or O to the lower tip of the wire by ways other than the surface of the wire. Passing of H to the upper part of the wire caused the potential of the electrode to be displaced toward the H side, while passing of O for several tens of hrs. did not change the potential materially. Quant. data for H were obtained by using a somewhat modified app. in which the Pt wire was fused into a glass tube and the lower tip of the wire was immersed in a cell filled with a H₂SO₄ soln. H and O were supplied to the upper part of the tube. Changes of the potential below the joint indicated the movement of adsorbed gas on the Pt/glass boundary. Filling the upper part of the tube with O caused no observable change of the potential of the lower part of the tube, while filling it with H caused a shift in the potential. The rate of diffusion of H at 30° was 3×10^{-4} cm.²/sec. It was assumed that the surface mobility of H was connected with the relatively small heat adsorption (10 kcal./mole) of H on Pt, whereas the adsorption of O was of the order of magnitude of 100-200 kcal./mole. M. Hoshino.

1964

Shlygin, A.I.

6

Dependence of adsorption and catalytic properties of a catalyst on its structure. A. I. Shlygin and N. G. Perminina. *Kaluliticheskoe Gidrotrochno-Oksizatsionie, Akad. Nauk Kazakh S.S.R., Trudy Konf.* 1955, 2:33-40; cf. *C.A.* 30, 4098; 47, 3677f. The effect of e.d. during prepn. of platinized electrodes on their properties was examd. Increase of e.d. during platinization raises the catalytic activity as tested on hydrogenation of MeEtC(OH)C:CH . This is caused both by increase of the no. of active centers and by increase of rate of adsorption of H_2 . It is suggested that the presence of some amorphous areas and defective lattice in the catalyst permits a more satisfactory realization of optimum distances between surface atoms for rupture of H_2 mols. and activation of org. mols. The platinized catalyst shows improved catalytic activity when the soln. used for platinizing is dild.; similar improvements result from chem. pptn. of Pt in the presence of gelatin. G. M. K.

PM

SHLYGIN, A. I.

7
Study of the reduction and electro-reduction of allyl alcohol on platinumized platinum. 7 Yu. A. Podgorskiy and A. I. Shlygin (M. V. Lomonosov State Univ., Moscow), *Zhur. fiz. Khim.* 30, 1521-3 (1956). Using a method described previously (C.A. 47, 2677f; 49, 12157d), the reduction of allyl alc. (I) on a Pt electrode was studied. The data showed that the reaction of I with this adsorbed H took place both as a hydrogenation process and a process of displacing the adsorbed H. In an acid medium the 2nd process predominated. I. Ravtar Leach

2

RM

Shlygin A. I.
USSR/Physical Chemistry, Kinetics, Combustion, Explosions,
Topochemistry, Catalysis.

B-9

Abs Jour : Ref Zhur - Khimiya, No 7, 1957, 22427.

Author : M. I. Nikolayev, A. I. Shlygin.

Inst : Not given

Title : Study of platinum-plated platinum baking process by electro-chemical methods. III. Thermal treatment in nitrogen atmosphere.

Orig Pub : Zh. fiz. khimii, 1956, 30, No 8, 1729-1731 (res angl.)

Abstract : The influence of platinum Pt (I) treated in N_2 atmosphere at 20, 100, 200, 300, 400, and 500° on its adsorption and catalytic properties is studied. With the increase of calcination temperature in N_2 the true surface (S) of I continuously decreases from $1.3 \cdot 10^5 \text{ cm}^2$ at 20° till $0.03 \cdot 10^5 \text{ cm}^2$ at 500°. The adsorption capacity of I in relation to H_2 is proportional to S. The rate of crystallization in N_2 is less by far than in H_2 , but somewhat greater than in O_2 . The speed constant k of H_2O_2 decomposition on I decreases with the growth of calcination temperature to 400°, but it increases somewhat at 500°. The true catalytic activity, i-e. k, referred to the surface unit of I, varies little with the increase of calcination temperature of

Card 1/2 *Moscow State Univ* 138-

SHLYGIN, A.I.

USSR/Physical Chemistry - Kinetics, Combustion, Explosions,
Topochemistry, Catalysis.

B-9

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 497

Author : Yu.A. Podvyazkin, A.I. Shlygin.

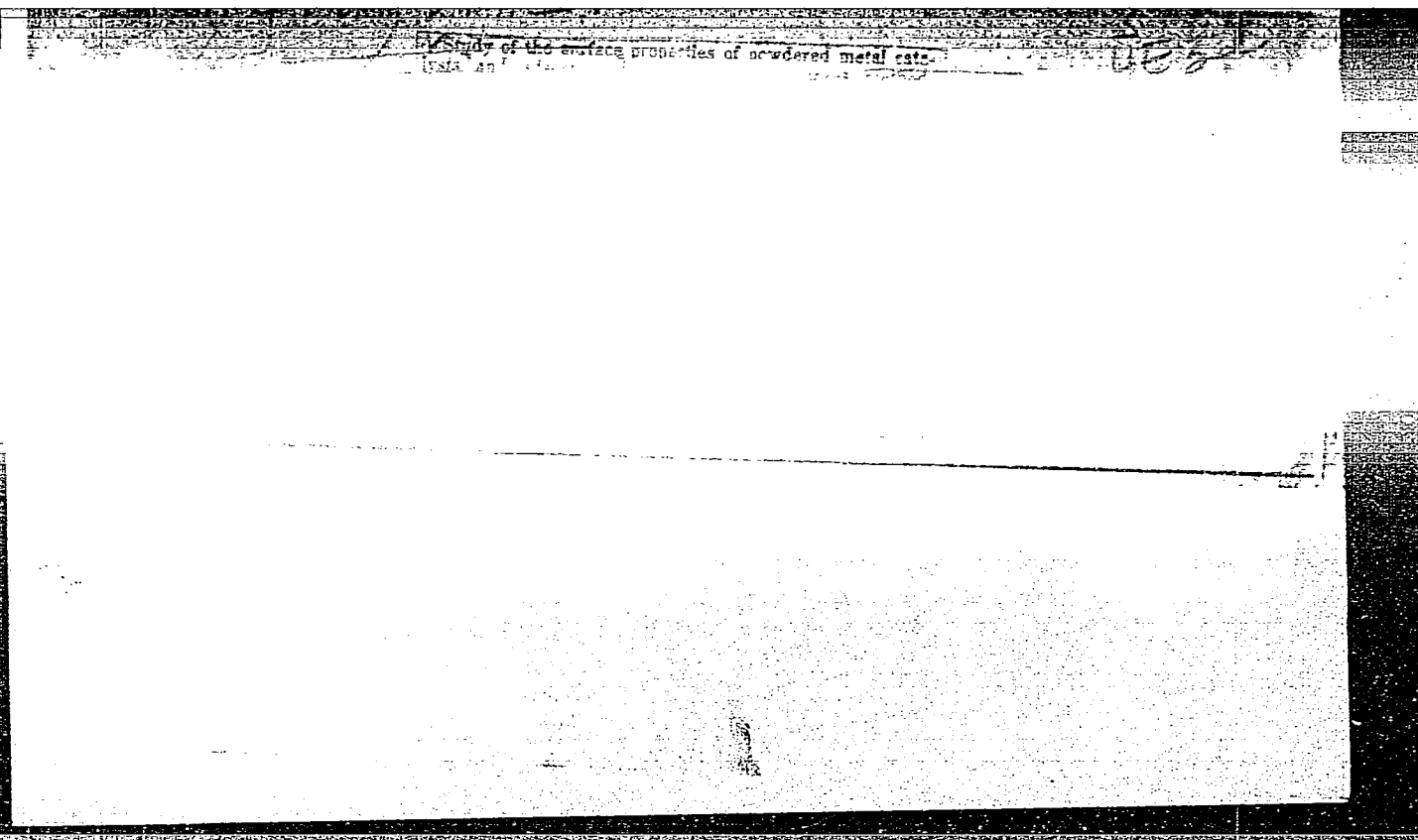
Inst : Moscow University, *Chair Electrochem*

Title : Possibility of Measuring Potentials of Powdered Catalyst
in Presence of Liquid Phase.

Orig Pub : Vestn. Mosk. un-ta, Ser. matem., astron., fiz., khimii,
1957, No 1, 131-136
/2

Abstract : It is proved that it is possible on principle to determine
the potential of metal dispersion catalysts at the bombard-
ing of an electrode with catalyst particles. The condi-
tions of the potential imposition by particles of powdered
nickel to a silver electrode are determined. The reliabi-
lity of the measurement of potentials of powdered nickel
at the hydrogenation process is shown.

Card 1/1



AUTHOR: Bogdanovskiy, G.A., Shlygin, A.I.

76-11-7/35

TITLE: On the Mechanism of the Electrooxidation of Alcohols and Aldehydes on Platinum (O mekhanizme elektrookisleniya spirtov i al'degidov na platine) On the Mechanism of the Electrooxidation of Ethyl Alcohol (O mekhanike elektrookisleniya etilovogo spirta)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 11, pp. 2428-2434 (USSR)

ABSTRACT: The process of the electrooxidation of ethyl alcohol on platinized platinum in an acid medium was investigated. It is shown that the polarization curve passes through a maximum, the potential of the beginning of the current decrease depending upon the alcohol concentration and amounting, for the concentration of 9 mol/l to 1 V. The opinion is expressed that the electrooxidation of ethyl alcohol acetaldehyde on platinum develops according to an electron-radical scheme in an acid medium. It is shown that the decrease of current, i.e. the decrease of the total velocity of electrooxidation is due to a decrease of the surface concentration of ethyl alcohol at the cost of the acetaldehyde which is formed. When using platinized platinum only acetaldehyde must be obtained in the case of a high

Card 1/2

AUTHORS: Tyurin, Yu. M., Shlygin, A. I. SOV/156-58-2-14/48

TITLE: Concerning the Application of the Method of Charge Plots to the Investigation of Powdered Metals (O primeneniі metoda krivyykh zaryazheniya k issledovaniyu poroshkoobraznykh metallov)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 2, pp. 261 - 265 (USSR)

ABSTRACT: The method referred to in the title was employed in the earliest investigations on the surface characteristics of several powdered metals (Refs 1,2). To make these plots an acceptable method, 2 methods were worked out: a) the wetting-out method and b) the impact method (Ref 2). The work reported in this paper should ascertain the possibilities and the reliability of the two methods. As working material, platinum black recrystallized at various temperatures was used (Ref 1). Carefully-purified 1 n. solutions of H_2SO_4 and HCl were used as electrolyte solutions. Figure 2 shows incomplete charge plots of the freshly recrystallized platinum black in 1 n. H_2SO_4 . Plot 1 is similar to that for platinized platinum. The charging process was reversible in the entire potential range used. This indicated

Card 1/4

Concerning the Application of the Method of Charge Plots SOV/156-58-2-14/48
to the Investigation of Powdered Metals

the equilibrium condition which the black reached in producing the plots. The plots 2 - 4 coincide with plot 1 only in the region of the potential $+0,1 - 0,8$ V. At the negative potentials indicated in plots 2 - 4, the influence of fluctuation in the form of the charge plot was especially noticeable. The reversibility of the charging process remained steady only in the latter potential range. To explain the anomalous curves (2 - 4) the influence of fluctuation on the charge plots of electrode A was studied without platinum black. The results are given in table 3. Electrode A was reversibly charged for the potential region in question in a steady system. During the plotting of the curve electrode B retained the initial value of $+0,50 - 0,55$ V. The charging was accompanied by no change in the partial pressure of the hydrogen in the system. Apparently the hydrogen adsorbed on the surface of the electrode and the molecular hydrogen in solution did not come to equilibrium. Curve 1 therefore represents a system which is not in equilibrium thermodynamically. As is apparent from figure 3 plots 2 - 4, coincide with plot 1 in the range in question when they are plotted showing a cathodic

Card 2/4

Concerning the Application of the Method of Charge Plots SOV/156-58-2-14/48
to the Investigation of Powdered Metals

polarization of the electrode with various kinds of fluctuation. The charging process is here irreversible, of course. As a result the values of specific surfaces, calculated on the basis of the capacity of a double layer, are on the average 1,9 times greater than the corresponding values which were found in comparing the adsorption capacity of the platinum black and the smooth platinum. In further considering that the smooth platinum has a roughness factor of 1,5 - 2,0, these results, together in inset 3 of figure 1, can be made to agree well. There are 4 figures, 1 table, and 5 references, 4 of which are Soviet.

ASSOCIATION: Kafedra elektrokhemii Moskovskogo gosudarstvennogo universiteta im.M.V.Lomonosova (Chair of Electrochemistry of the Moscow State University imeni M.V.Lomonosov)

SUBMITTED: October 23, 1957

Card 3/4

Concerning the Application of the Method of Charge Plots SOV/156-58-2-14/48
to the Investigation of Powdered Metals

Card 4/4

BOGDANOVSKIY, G.A.; FEOKTISTOV, L.G.; SHLYGIN, A.I.

Behavior of benzene on platinated platinum. Nauch. dokl. vys.
shkoly; khim. i khim. tekhn. no. 3:443-446 '58. (MIRA 11:10)

1. Predstavlena kafedroy elektrokhemii Moskovskogo gosudarstvennogo
universiteta imeni M.V. Lomonosova.
(Benzene) (Platinum)

TYURIN, Yu. M.; SHLYGIN, A.I.

Study of sintering of platinum black by means of charge curves.
Nauch. dokl. vys. shkoly; khim. i khim. tekh. no.3:439-442 '58.
(MIRA 11:10)

1. Predstavlena kafedroy elektrokhimii Moskovskogo gosudarstvennogo
universiteta imeni M.V. Lomonosova.
(Platinum)

23

5(4)

AUTHOR: Shlygin, A.I.

SOV/55-58-3-28/30

TITLE: . On Some Fundamental Principles Facts of Electrochemistry
(O nekotorykh osnovnykh ponyatiyakh i polozheniyakh elektro-
khimii)

PERIODICAL: Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki,
astronomii, fiziki, khimii, 1958, Nr 3, pp 229-234 (USSR)

ABSTRACT: The author tries to define exactly different overlapping
notions (absolute potential, Galvani potential, electrode
potential etc).
He points to the fact that under a correct definition the
problem of the absolute potential in electrochemistry does
not exist.

Card 1/2

On Some Fundamental Principles^{and} Facts of Electrochemistry SOV/55-58-3-28/30

There are 4 references, 3 of which are Soviet, and 1 is German.

ASSOCIATION: Kafedra elektrokhimii (Chair of Electrochemistry)

SUBMITTED: July 1, 1957

Card 2/2

AUTHORS: Tshin, Yu. M., Shkolin, A. I. SOV/156-58-3-9:52

TITLE: Investigation on the Caking of Platinum Black by the Method of Charge Curves (Izucheniye zhekaniya platinovoy cherni metodom priykh zaryazheniya)

ABSTRACT: Nauchnyye doklady vysshego imeniy. Khimiya i khimicheskaya tekhnologiya, 1958, No. 1, pp. 439-442 (USSR)

SYNOPSIS: The caking of platinum black was investigated by the authors in order to find a connection between the catalytic activity of platinum black, the size of its specific surface, and its absorption capacity. The hydration of dimethylacetyleneile-carbinol and the decomposition of hydrogen peroxide were used to determine the catalytic activity. The specific surface and the capacity for absorbing hydrogen and oxygen was measured by the method of charge curves. Platinum black was thermally treated in a nitrogen atmosphere for one hour; the temperature interval from 100° to 600° was covered. The initial properties of the platinum black used are given in table 1. The experimental results obtained are given in diagrams. The curves for the dependence of the specific surface,

NOV/156 58-4-9/52

Investigation on the Caking of Platinum Black by the Method of Charge

the capacity for adsorbing hydrogen and oxygen vs. the temperature of caking was essentially the same (Diagram 1); a common formula can be written. The cathodic charge curves for the original catalyst shown as well as for that caked on a nickel foil (shown as dotted in diagram 2). Diagram 3 shows the dependence of the catalytic activity on the temperature of caking. The experiments show that hydrogen is not adsorbed at the defect places but at definite places in the crystal lattice. Reductive centers are formed by the entrance of oxygen into the crystal lattice; thus the higher activity in the reaction of the decomposition of hydrogen peroxide following the thermal treatment of the catalyst is explained. There are 4 figures, 1 table, and 2 references, 1 of which are foreign.

AC 41411 11

Kafedra — L. I. Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Chair of electrochemistry of Moscow State University imeni M. V. Lomonosov)

SOV/156-58-3-10/52

AUTHORS: Bogdanovskiy, G. A., Feoktistov, L. G., Shlygin, A. I.

TITLE: The Behavior of Benzene on Platinized Platinum (O povedenii benzola na platinirovannoy platine)

BIBLIOGRAPHICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1953, Nr 3, pp. 443-446 (USSR)

ABSTRACT: The adsorption of an organic substance on platinized platinum can be investigated electrochemically by measuring the potential of the adsorbed substance on the degassed surface of the electrode. The method was described in detail by Shlygin (Ref 1). The experimental results were illustrated by diagrams which are discussed. They show: Diagram 1: the charge curve in 0,1 n H_2SO_4 (1) the charge curve in 0,1 n with benzene saturated H_2SO_4 , and the charge curve in 0,1 n with benzene-saturated HCl (3). Diagram 2: the potential change in 0,1 n H_2SO_4 with the introduction of benzene into the system with the degassed platinum electrode (1), with hydrogen-saturated electrode (2) and in 0,1 n HCl (3). Diagram 3: the charge curve in 0,1 n H_2SO_4 without (1) and with benzene (2).

Card 1/2

The Behavior of Benzene on Platinized Platinum

SOV/156-58-3-10/52

Diagram 4: the curve of the electroreduction of benzene in 0,1 n H_2SO_4 (1) and 0,1 n HCl (2). Theoretically the electroreduction in HCl should take place more rapidly than in H_2SO_4 , where the bond energy of the adsorbed hydrogen is higher. This is not the case, however, from the experimental results it may be concluded that the slow rate of electroreduction of benzene on platinized platinum is related to the presence of a double electric layer which hampers the penetration of the benzene to the electrode. There are 4 figures and 4 references, which are Soviet.

AUTHORIZATION:

Kafedra elektrokhemii Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova
(Chair of Electrochemistry of Moscow State University imeni M.V. Lomonosov)

SUBMITTED:

January 21, 1958

Card 2/2

SHLYGIN, A. I.

11-1-85/32

AUTHORS: Martynuk, G. A. , Shlygin, A. I.

TITLE: The Mechanism of the Electrooxidation and Electoreduction of Some Compounds on Platinum (O mekhanizme elektokhicheskogo i elektrovostanovleniya nekotorykh soedineniy na platine)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1990, Vol. 64, No. 1, p. 161-169 (USSR)

ABSTRACT: In the present work, beside other investigation methods, the following method was used specially. An electrode of platinized platinum was anode-polarized in 0.1N H₂SO₄ saturated with nitrogen; viz. up to a potential of 0.5 - 0.6 V on the reversible hydrogen electrode in the solution concerned. By this, a complete degassing of the solution with respect to the electrochemically active gases (H₂, O₂) was obtained. Thereafter the substance to be investigated was introduced, and the variation of the electrode potential was determined with respect to time. Here, investigation data about the behavior of some compounds with tertiary and double bonds, of monoatomic alcohols, of aldehydes, as well as of aromatic compounds of the aromatic series are given. The processes of direct electron exchange between the molecules of the substances and the electrode is shown. Here, the electron transition dependent on the substance was observed, as well as the adsorption to the electrode (C₂H₅OH,

Card 1/3

77-1-1-1
The Method of the Electrochemical and Electrocapillary Investigation of Substances on Platinum

H_2O , H_2O_2 , and others), as in the inverse direction (H_2O , H_2O_2). It is known that the electron exchange is a process of the adsorption of molecules on the electrode can by no means take place. The supposition is expressed that the first process takes place in the same way, as in the tunnel effect. Furthermore, it is seen that according to the method given here, it is also possible to investigate the adsorption of dipole-molecules and their orientation at the adsorption. In a number of cases an adsorption with a noticeable velocity is realized only by means of the electron exchange between the electrode and the substance. The phenomenon of an electron exchange between the electrode and the molecules of substance also takes place on occasion of electrocapillary investigations. By means of the peculiarity of the method of recording, the electrocapillary curves this phenomenon has no effect upon the shape of the curves. The assumption is expressed that the electrochemical reactions possibly can take place also without preceding adsorption of the substance on the electrode. Beside the method initially mentioned other methods also developed by A. I. Shargin and collaborators were used, as well. There are 4 figures, and 1 Slavic reference.

Card 2/3

76-1-25/32

The Mechanism of the Electrooxidation and Electroreduction of Some Compounds on Platinum

ASSOCIATION: Moscow State University imeni M. V. Lomonosov
(Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova)

SUBMITTED: October 30, 1956

AVAILABLE: Library of Congress

Card 3/3

AUTHORS: Martinyuk, G. A., Shlygin, A. I. 76-32-2-20/38

TITLE: On the Mechanism of the Electric Reduction of Nitrobenzene and of Some of Its Derivatives I.
(O mekhanizme elektrosstanovleniya nitrobenzola i nekotorykh yego proizvodnykh. I.)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 2, pp. 368-373 (USSR).

ABSTRACT: The authors investigated the reduction of nitrobenzene and its derivatives in the adsorption layer between the adsorbing hydrogen and the substance given. Therefore unique final conclusions could be drawn as to the reactivity of the activated adsorbed hydrogen and that of the organic substance. The principle of the here applied method consisted in the following: The electrode was saturated with hydrogen until it reached the reversible hydrogen potential, the excess hydrogen then being removed by means of nitrogen (in this the potential was displaced up to 20 mV to the anode side), and then 0,1 cm³ of nitrobenzene or of its derivative were introduced. The potential was measured every minute after the introduction into the cell of the substance to be investigated.

Card 1/3

On the Mechanism of the Electric Reduction of Nitrobenzene 76-32-2-20/38
and of Some of Its Derivatives

The method mainly consisted in the determination of the hydration velocity in the adsorption layer of hydrogen. As the reaction between the adsorbed hydrogen and the corresponding organic substance was investigated here and in consequence of this also the process of instantaneous electron interaction between the organic molecule and the electrode can be investigated, as well. The organic substances were introduced to the degassed electrode surface. It was shown that the velocity of electric reduction decreases with the respective substances according to the following order: nitrobenzene, n-nitrophenol, n-nitro-aniline. The usual polarization curves were taken from which it can be seen that the electric reduction of nitrobenzene starts at a potential of 0,35 V. At the cathode charge curve this corresponds to the potential of the formation of the adsorbed hydrogen. Thus the electric reduction of nitrobenzene starts immediately after the formation of adsorbed hydrogen. The experiments showed that the reactivity in relation to the adsorbed hydrogen decreases according to the following order: nitrobenzene, n-nitrophenol, n-nitro-aniline. The adsorption power decreases according to the same order.

Card 2/3

There are 5 figures, and 2 references, 2 of which are Slavic.

On the Mechanism of the Electric Reduction of Nitrobenzene 76-32-2-20/38
and of Some of Its Derivates

ASSOCIATION: Moscow State University imeni M. V. Lomonosov
(Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova)

SUBMITTED: November 5, 1956.

1. Nitrobenzenes--Reduction 2. Hydrogen--Adsorption 3. Nitro-
benzenes--Electrochemistry

Card 3/3

On the Mechanism of the Electric Oxidation of Sulfur Dioxide 76-32-2-27/38
on Platinum.I.

case two electrons take part in the process and it can therefore be assumed that the reaction comprises two single-electron stages. The scheme is given according to the stages. The 2nd and 4th stage apparently depend little on the potential. But as this dependence is sufficiently clear in the experiment the limiting stage can be the 1st or the 3rd. As is known from the theory of slow ion discharge the coefficient $\partial E / \partial \lg y$ must be equal to 0,116 if the stage of the release of the first electron is the slowest stage. As long as it was equal to 0,054 in the present investigations it can be maintained that the limiting stage of the whole process is the third stage - that of the release of the second electron from the sulfur dioxide molecule. - It is further shown that the character of the limiting electron stage is predetermined by the magnitude of the electrode potential, and that the slowest stage of the electric oxidation of sulfur dioxide is that of the release of the first electron, if the value of the electrode potential exceeds 0,6 V. It is shown that the formation of adsorbed oxygen leads to an important decrease of the surface density or the charge of a double electric layer and consequently possibly to a decrease of the

Card 2/3

On the Mechanism of the Electric Oxidation of Sulfur Dioxide 76-32-2-27/38
on Platinum. I.

velocity in the actual electro-chemical stages of the electric oxidation process (which becomes evident in form of a decrease of amperage). There are 1 figure and 3 references, all of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: December 10, 1956

1. Sulfur dioxide--Electrochemistry 2. Sulfur dioxide--Oxidation
3. Sulfur dioxide--Electron transitions 4. Platinum electrodes
--Performance 5. Oxygen--Adsorption

Card 3/3

Author: Levin, G. I., Miron, A. I. 307/76-32-8-23/37

Title: The mechanism of the electroreduction of Nitro-Benzene and of some of its derivatives (O mekhanizme elektrovosstanovleniya nitrobenzola i nekotorykh ego proizvodnykh) II. The influence of the electrolyte composition (II. Vliyeniye sostava elektrolita)

Source: Zhurnal Khimicheskoy Fiziki, 1958, Vol. 28, No 2, pp. 1907-1913 (1958)

Summary: The present investigations were carried out in continuation of an earlier paper. The solutions 0,1 N NaOH, 0,1 N H_2SO_4 , 0,1 N HCl with and without ethanol (50%) were used in the experiments, and m-nitrophenol, hydroquinone and nitrobenzene were investigated. If the electroreduction takes place through an adsorption of the hydrogen a connection between the potential of the occurrence of adsorbed hydrogen and the initial potential of the electroreduction of the substances mentioned must exist. This was actually found, and thus the influence of the electrolyte composition in this medium was proved. The investigation with an alcohol

201/76-52-8-29/37

Electroreduction of Nitro-Benzene and of Some of Its Derivatives. II. The Influence of the Electrolyte Composition

dition showed that the reduction potential becomes somewhat more negative. It is assumed that during the electroreduction process of nitro-benzene a reaction product is formed which highly adsorbs on the electrode and then is reduced more slowly. The conversion of $C_6H_5NO_2$ into aniline is regarded the limiting stage; for this a schematic representation is given in which three reaction stages are distinguished. From the experimental data may be assumed that the electroreduction of nitro-benzene in alkaline medium as well as in the presence of alcohol takes place according to an electron mechanism. There are 3 figures and 5 references, all of which are Soviet.

Author: Leningradskiy gosudarstvennyy universitet imeni M. V. Lomonosova (Lomonosov University named M. V. Lomonosov)
 Title: Moscow, 1977

AUTHORS: Martinyuk, G. A., Shlygin, A. I. SOV/76-32-9-19/46

TITLE: On the Mechanism of the Electro-Reduction of Nitrobenzene and Some of Its Derivatives (O mekhanizme elektrovosstanovleniya nitrobenzola i nekotorykh yego proizvodnykh) III. The Effect of **Electrode Poisoning** (III. Vliyaniye otravleniya elektroda)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 9, pp 2073 - 2079 (USSR)

ABSTRACT: The authors investigated the electrolytic reduction of $C_6H_5NO_2$, C_6H_5NHOH , $C_6H_4(NO_2)(OH)$ in 0,1 n. sulfuric acid, 0,1 n. sodium hydroxide, and 50% ethyl alcohol which was acidified with 0,1 n. sulfuric acid. They used a large platinized electrode which had been poisoned with sodium arsenite, and mercury (II) chloride or cyanide. The polarization curves are reproduced (Figs 1-8). From these curves it is seen that the rate of reduction decreases in sulfuric acid and with the poisoning by arsenic or mercury, since the mercury desorbs hydrogen from the surface of the electrode and its bond

Card 1/3

On the Mechanism of the Electro-Reduction of Nitrobenzene SOV/76-32-9-19/46
and Some of Its Derivatives. III. The Effect of **Electrode Poisoning**

energy is considerably increased by the arsenic. The electrolytic reduction results from a "mixed mechanism" even if hydrogenation by adsorbed hydrogen predominates up to the "reversible hydrogen potential". The poisoning with cyanide does not alter the rate of reduction. This effect can be explained in terms of two compensatory factors, namely, the desorption of hydrogen (in part) by the cyanide ions, and the increasing of the bond energy of the remaining hydrogen by the cyanide ions. In acidified alcohol solution trace amounts of mercury and arsenic activate the reduction. This effect results through an "electronic mechanism" (direct electrolytic reduction without involving hydrogen as an intermediary). The reaction probably also takes place by a mixed mechanism, but predominantly by the electronic mechanism. There are 8 figures and 3 references, 3 of which are Soviet.

Card 2/3

On the Mechanism of the Electro-Reduction of Nitrobenzene SOV/76-32-9-19/46
and Some of Its Derivatives. III. The Effect of **Electrode Poisoning**

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.M.V.Lomonosova
(Moscow State University imeni M.V.Lomonosov)

SUBMITTED: March 28, 1957

Card 3/3

SOV/76-32-11-4/32

5(4)

AUTHORS: Tyurin, Yu. M., Shlygin A. I.

TITLE: Employing Electrochemical Methods for the Investigation of Disperse Catalysts and Adsorbents (Primeneniye elektrokhimicheskikh metodov k issledovaniyu dispersnykh katalizatorov i adsorbentov) I. On the Charge Curves of Platinum Black (I. O krivyykh zaryazheniya platinovoy cherni)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 11, pp 2487-2491 (USSR)

ABSTRACT: The applicability and reliability of the method of the charge curve (Refs 1,2) for the investigations mentioned in the title are studied. As the production of charge curves according to the Pt-netting method (Refs 2,3) causes a loss of the sample during the experiment, the authors employed the "method of collision". A platinized Pt electrode was used as it has a larger surface and a lower polarizability. The experiments were carried out in a cell (Diagram) filled with hydrogen saturated 1 N H_2SO_4 or 1 N HCl, which was shaken (600-1200 times/minute, amplitude 2-7 cm). Three samples of platinum black were investigated. Nr 1 heated at 110° in vacuum (10^{-3})

Card 1/2

SOV/76-32-11-4/32

Employing Electrochemical Methods for the Investigation of Disperse Catalysts and Adsorbents. I. On the Charge Curves of Platinum Black

Atm), Nr 2 heated in air at 135°, and Nr 3 dried at room temperature. The experiments could only be carried out at potentials of from +0.1 to + 1.35 Volt, as outside this interval polarization effects may be formed which are explained by a diffusion of molecular oxygen from the platinum surface into the solution (analogous observation Ref 8). The obtained curves differ little from each other and can be used for the determinations of the adsorbed hydrogen and of the actual surface of the platinum black. Comparisons with data given in publications were made, and the values were found to agree, for instance, with those by Benton (Ref 7). There are 4 figures, 1 table, and 8 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: April 9, 1957

Card 2/2

SHLYGIN, A. I.

5(4) PHASE I BOOK EXPLOITATION SOV/2216

Sveshchaniye po elektrokimii. 4th, Moscow, 1956.

Trudy... [sbornik] (Transactions of the Fourth Conference on Electrochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 568 p. Errata slip inserted. 2,500 copies printed. Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Editorial Board: A.M. Prumkin (Resp. Ed.), Academician, O.A. Yasin, Professor; S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, Professor; Ye. M. Kolotyrkin, Doctor of Chemical Sciences; V.V. Losev, P.D. Lukovtsev, Professor; Z.A. Solov'yeva; V.V. Stender, Professor; and O.M. Florianovich; Ed. of Publishing House: N.G. Yegorov; Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engineers, physicists, metallurgists and researchers interested in various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences, USSR. The collection pertains to different branches of electrochemical kinetics, double layer theories and galvanic processes in metal electrodeposition and industrial electrolysis. Abridged discussions are given at the end of each division. The majority of reports not included here have been published in periodical literature. No personalities are mentioned. References are given at the end of most of the articles.

Barotakaya, I.A., and A.I. Oshin (Institute of Electrochemistry, Academy of Sciences, USSR). Effect of Atomic Hydrogen Diffusion on the Potential of Polarized Iron Electrodeposition on It. 82

Vishniakakis, R.M., and Yu. Yu. Matulis (Institut Khimii i Khimicheskoy tekhnologii AN Lit SSR, Institute of Chemistry and Chemical Technology, Academy of Sciences, Lithuanian SSR). Role of Inorganic Ions in the Process of Electrolytically Separating Hydrogen from Acid Solutions at a Rotating Cathode 86

Iofa, Z.A., and E.A. Kuznetchenko (Moskovskiy gosudarstvennyy universitet-Moscow State University). Influence of the Nature of the Cathode on the Separation of Hydrogen from Alkaline Solutions at a Mercury Cathode 91

Kuchinskii, Ye. M., and I. Ye. Veselovskaya. Dependence of Hydrogen Overvoltage on the Surface Condition of an Iron Cathode in an Alkaline Solution 96

Card 5/34

Durdin, Ya. V., I. Kish, and V.I. Kravtsov (Leningradskiy gosudarstvennyy universitet, Leningrad State University, Leningrad - Leningrad State University, Leningrad, A.A. Zhdanov - the Oscillographic Method in Investigating the Kinetics of Electrode Processes Which Take Place at the Surface of Dissolving Metals 102

Losev, V.V., and A.M. Khopin (Institute of Electrochemistry, Academy of Sciences, USSR). Using Radioactive Indicators to Study Processes of Ionization and Discharge of Metals Ions at Amalgam Electrodes 116

Podvyazkin, Yu. A., and A.I. Shlygin (Moscow State University) Charging Curves of Powder Catalysts and Adsorbents 125

Disacuation (L.S. Khosh, L.I. Kriehvalik, A.L. Rotinyan, N.P. Zhuk, I.P. Anoshchenko, V.V. Krasnoperov, M.A. Gerasimov (Deceased), A.O. Stromberg and contributing authors) 128

Card 6/34

5(4) PHASE I BOOK EXPLOITATION SOV/2216

Sovetskaniye po elektrokimii. 4th, Moscow, 1956.

Trudy...: Izborniki (Transactions of the Fourth Conference on Electrochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 863 p. Errata slip inserted. 2,500 copies printed. Sponsoring Agency: Akademiya nauk SSSR. Odeleniye khimicheskikh nauk.

Editorial Board: A.N. Prumkin (Resp. Ed.), Academician, O.A. Yeshin, Professor, S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, Professor, Ya. M. Kolotyrkin, Doctor of Chemical Sciences, V.V. Losev, P.D. Lukovisev, Professor; Z.A. Solov'yeva; V.V. Stander, Professor; and G.M. Floranovich; Ed. of Publishing House: N.G. Yegorov; Tech. Ed.: T.A. Prusaikova.

PURPOSE: This book is intended for chemical and electrical engineers, physicists, metallurgists and researchers interested in various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences of the USSR. The collection pertains to different branches of electrochemistry. The collection contains reports on galvanic processes in metal kinetics, double layer theories and electrolysis. Bridged discussions on electrochemical and industrial electrolysis. The majority of reports not given at the end of each division. Published in periodical literature. No personalities are mentioned. References are given at the end of most of the articles.

Krasil'shchikov, A.I. (Gosudarstvennyy Institut Azotnoy Promyshlennosti - State Institute of the Nitrogen Industry). Electrochemical Reactions of Oxygen 272

Gerbovich, M.A. (Deceased), and R.I. Kaganovich (Moscow State University). Study of the Mechanism of Some Anode Processes by Combining Electrochemical and Tagged-Atom Methods 277

Shlygin, A.I., and G.A. Bogdanovskiy (Moscow State University). Study of the Mechanism of the Electrochemical Oxidation of Some Compounds on Platinum 282

Khomyskov, V.G., N.G. Bikhchisaraya'syan, and A.P. Tomilov (Moskovskiy Khimiko-Tekhnologicheskii Institut Imeni D.I. Mendeleeva-Moscow Institute of Chemical Technology Imeni D.I. Mendeleeva). Mechanism of the Electrolytic Oxidation of Acetone in Alkaline Solutions 287

Khomutov, M. Ye. (Moscow Institute of Chemical Technology Imeni D.I. Mendeleeva). Mechanism of Some Irreversible Electrochemical Reactions 292

Card 12/34

olytic-Oxidation Reactions 292

Pomenko, A.S., T.M. Abramova and I.L. Gankina (Institut Fizicheskoy Khimii AN USSR-Institute of Physical Chemistry AS USSR). Mechanism of the Corrosion of Iron, Magnesium, Zinc and Aluminum With the Aid of Heavy Oxygen Isotopes 299

Discussion (A.M. Ginzberg, A.P. Tomilov, P.D. Lukovisev, O.A. Tedoradze and contributing authors) 302

PART IV. ELECTRODE PROCESSES IN FUSIONS 309

Yeshin, O.A. (Ural'skiy politekhnicheskii Institut "Ural Polytechnic Institute). Electrode Processes in Fluorinated Oxides 311

Piontelli, R., G. Sternheim, M. Francini, and G. Montanelli (Italy). Investigation of Overvoltage Phenomena in Fluorinated Salts 323

Card 13/34

BOGDANOVSKIY, G.A.; SHLYGIN, A.I.

Decomposition of hydrogen peroxide on platinum-plated platinum containing a small amount of palladium. Vest. Mosk.un.Ser.mat., mekh., astron., fiz., khim. 14 no.1:155-163 '59. (MIRA 13:8)

1. Kafedra elektrokhemii Moskovskogo universiteta.
(Hydrogen peroxide) (Platinum)

5(4)

SOV/76-33-4-16/32

AUTHORS: Martinyuk, G. A., Shlygin, A. I.

TITLE: On the Mechanism of Hydrogenation of Nitrobenzene in the Presence of a Liquid Phase (O mekhanizme gidrirovaniya nitrobenzola v prisutstvii zhidkoy fazy)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 4, pp 852-857 (USSR)

ABSTRACT: A catalytic hydrogenation of nitrobenzene (I) was carried out on platinum black in order to compare the experimental results with those of a previous investigation (Ref 3) in which electro-reduction of (I) took place on platinized Pt. The hydrogenation took place in acid and alkaline solutions, mainly at room temperature. It was found that the reaction has different rates at different places of the catalyst surface and that at especially active centers the rate is so high that it is determined by the adsorption rate of hydrogen. It is assumed that intermediate reaction products are formed which inhibit hydrogenation. Mercury, arsenic and cyanogen ions were tested as catalyst poisons (CP) (Figs 3, 4) and it was found that in 0.1 n H_2SO_4 mercury shows the strongest poisoning effect which may be explained by a reduction of the rate of hydrogen adsorption at the catalyst. The decrease in the reduction rates of (I) in the case of a poisoning of the catalyst with arsenic is explained by a

Card 1/2

SOV/76-33-4-16/32

On the Mechanism of Hydrogenation of Nitrobenzene in the Presence of a Liquid Phase

simultaneous effect of an increase of the Pt adsorption potential (with reference to hydrogen) and by a decrease of the rate of adsorption of hydrogen with the latter being the determinant factor. The cyanogen ions on the one hand cause a partial desorption and on the other, a decrease in the binding energy of the remaining hydrogen. Due to this fact no stopping of the reaction may be attained even at a complete poisoning of the catalyst. In 0.1 n NaOH the catalytic hydrogenation of (I) takes place more rapidly than in the acid medium and it is assumed that in the alkaline medium the reaction takes place according to an electron radical mechanism (ERM). The strong poisoning effect of the CN-ions which was observed may be explained by the formation of a stable complex compound (CN-Pt). It was observed also in the electrooxidation of ethanol (dissertation by Kambarov, MGU, kafedra elektrokhimii (MSU, Chair of Electrochemistry) which also takes place according to an (ERM). There are 5 figures and 8 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: September 24, 1957

Card 2/2

5 (4)

AUTHORS:

Bogdanovskiy, G. A., Shlygin, A. I. SOV/76-33-8-15/39

TITLE:

On the Mechanism of Electro-oxidation of Alcohols and Aldehydes on Platinum. II. On the Electro-oxidation Mechanism of Acetaldehyde

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 8, pp 1769 - 1773 (USSR)

ABSTRACT:

Since acetaldehyde (I) is an intermediate product of the ethanol electrolysis, investigations of the electro-oxidation (EO) of (I) were carried out. (EO) took place in 1 n H_2SO_4 and a larger platinum-plated platinum electrode (20 cm^2) without mixing, or a revolving platinum disc (0.2 cm^2) was used as an electrode. The investigation methods have already been described (Ref 1). The polarisation curves (PC) of the (I)-oxidation obtained show that the current intensity (and with it the rate of (EO)) increases as the potential (P) rises. A maximum is reached at a (P) of 1.25 v, and then the polarization current falls to a minimum. Since a discernible (EO) of (I) starts at a (P) of 0.6 v (i.e., there is no adsorbed oxygen on the electrode), it may be assumed that the (EO) takes place according to an electron radical mech-

Card 1/2

On the Mechanism of Electro-oxidation of Alcohols and Aldehydes on Platinum. II. On the Electro-oxidation Mechanism of Acetaldehyde SOV/76-33-8-15/39

anism. The direct transfer of electrons from the (I) molecule to the electrode is considered the first stage of the (EO) of (I). By this process positively charged ion molecules are formed. Since the latter are unstable they react with the water molecules by splitting off from them the protons. The (EO) of (I) takes place, in principle, similar to the discharge of water molecules. The above-mentioned current drop is attributed to the appearance of adsorbed oxygen on the electrode, since oxygen has an inhibiting effect upon the (EO) of (I). The form of the (PC) of the (EO) of (I) is to a great extent dependent upon the surface properties of the electrode, and its preliminary treatment. The latter will necessarily also have an effect upon the form of (PC) in the ethanol oxidation, since (I) is an intermediate product there. There are 3 figures and 3 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)
SUBMITTED: January 21, 1958
Card 2/2

KLYANINA, G.L.; SHLYGIN, A.I.

Electronic interaction of sulfur dioxide and an electrode and new possibilities for the experimental determination of oxidation-reduction potentials. Soob.DVAFAN SSSR no.12:37-41 '60. (MIRA 13:11)

1. Dal'nevostochnyy gosudarstvennyy universitet i Dal'nevostochnyy filial imeni V.L.Komarova Sibirskogo otdeleniya AN SSSR.
(Oxidation-reduction reaction) (Sulfur dioxide)

68338

5.4600
5.3300(A)S/076/60/034/01/009/044
B010/B014~~5(4)~~
AUTHORS:Bogdanovskiy, G. A., Shlygin, A. I.

TITLE:

The Mechanism of Electrooxidation of Alcohols and Aldehydes
on Platinum. III. The Shape of Polarization Curves of the
Oxidation of Ethyl Alcohol

PERIODICAL:

Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 1, pp 57 - 62 (USSR)

ABSTRACT:

In the present paper considerations on the shape of polarization curves of ethyl alcohol on platinum are discussed on the basis of experimental data. Figures 1 and 2 illustrate polarization curves obtained from a large platinized platinum electrode (without mixing) and a rotating platinum disk. The visible surface of the large electrode was 20 cm^2 and that of the disk 0.2 cm^2 . These curves exhibit 2 maxima one of which occurs at a potential of 0.9 v and the other at 1.25 v. These two maxima are accompanied by a considerable amperage drop. It may be assumed that various reasons account for this fact. The first depression at 0.9 v is caused by the inhibiting action of the intermediate product - of the acetaldehyde. The second depression at 1.3 v is caused by the occurrence of oxygen adsorbed on the electrode.

Card 1/3

68338

The Mechanism of Electrooxidation of Alcohols and Aldehydes on Platinum. III. The Shape of Polarization Curves of the Oxidation of Ethyl Alcohol

S/076/60/034/01/009/044
B010/B014

increase in the maximum current. In this case the first maximum could be observed already at 0.6 v (Fig 7). Figures 8 and 9 represent further polarization curves of rotating disks. In conclusion, it is said that in the electrooxidation of ethyl alcohol on platinized platinum in acid solutions three potential zones may be distinguished: 0.5 - 1 v: conversion of ethyl alcohol into acetaldehyde; 1 - 1.6 v: oxidation of acetaldehyde in acetic acid. The transition into this zone is usually associated with a current depression. In the range 1.6 - 1.7 v a further conversion of acetic acid occurs. This generalization may not be taken as a binding rule since the limits of the above ranges may shift according to the activity of the electrode. There are 9 figures and 6 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: January 26, 1959
Card 3/3

KLYANINA, G.L.; SHLYGIN, A.I. (Vladivostok)

Mechanism of the electrolytic reduction of sulfur dioxide on
poisoned electrodes. Zhur.fiz.khim. 35 no.11:2598-2601 N '61.
(MIRA 14:12)

1. Dal'nevostochnyy gosudarstvennyy universitet, kafedra
fizicheskoy khimii.

(Sulfur dioxide)
(Reduction, Electrolytic)

KLYANINA, G.I., SHLYGIN, A.I.

Mechanism of the electrolytic oxidation of sodium sulfite.
Zhur. fiz. khim. 36 no.6:1310-1312 Je'62 (MDRA 17:7)

1. Dal'novostochnyy universitet, Vladivostok.

KLYANINA, G.L.; SHLYGIN, A.I.

Possibility of the electrooxidation of sulfur dioxide by electrolytic oxygen. Soob. DVFAN SSSR no. 15:27-30 '62. (MIRA 17:9)

1. Dal'nevostochnyy gosudarstvennyy universitet i Dal'nevostochnyy filial imeni Komarova Sibirskogo otdeleniya AN SSSR.

KLYANINA, G.L.; SHLYGIN, A.I.

Mechanism of the electroreduction of sulfur dioxide on platinum.
Zhur. fiz. khim. 36 no.9:1849-1853 S '62. (MIRA 17:6)

1. Dal'nevostochnyy gosudarstvennyy universitet, Vladivostok.

SHLYGIN, A.I.

"On the Problem of Poisoning in Electrochemistry."

Report presented at the 14th meeting CITCE, Intl. Comm. of
Electrochemical Thermodynamics and Kinetics, Moscow, 19-25
Aug 63.

Far-East State University, Vladivostok, U.S.S.R.

GERASIMOV, Yakov Ivanovich, prof.; DREVIN, Vladimir Petrovich;
YEREMIN, Yevgeniy Nikolayevich; KISELEV, Andrey
Vladimirovich; LEBEDEV, Vladimir Petrovich; PANCHENKOV,
Georgiy Mitrofanovich; SHLYGIN, Aleksandr Ivanovich;
NIKOL'SKIY, B.P., prof., retsenzent; SHUSHUNOV, V.A., prof.,
retsenzent; LUR'YE, G.Ye., red.; SHPAK, Ye.G., tekhn. red.

[Course in physical chemistry] Kurs fizicheskoi khimii. [By]
IA.I.Gerasimov i dr. Moskva, Goskhimizdat, 1963. Vol.1. 624 p.
(MIRA 17:1)

1. Chlen-korrespondent AN SSSR (for Gerasimov, Nikol'skiy).
2. Kafedra fizicheskoy khimii Leningradskogo gosudarstvennogo universiteta (for Nikol'skiy, Shushunov).

DAVODIYAN, R.L.; SHLYGIN, A.I.

Potentials of powdered adsorbents. Soob. DVFAN SSSR no.18:23-26 1963.
(MIRA 17:11)

1. Dal'nevostochnyy filial imeni V.I. Komarova Sibirskogo otdeleniya
AN SSSR, i Dal'nevostochnyy gosudarstvennyy universitet.

FIGULEVSKIY, N.A. [deceased]; ZHUKOV, P.K.; KAZANIN, Yu.I.; KRIKUNOVA, N.P.;
MURSALIMOV, Kh.I.; SHLYGIN, A.Ye.

Characteristics of the complex metal mineralization of the
Dzhungarian Ala-Tau and further prospecting. Izv. AN Kazakh. SSR
Ser.geol. no.4:45-57 '59. (MIRA 15:4)
(Dzhungarian Ala-Tau—Ore deposits)

KAYUPOV, A.K.; SHLYGIN, A.Ye.

Changes in the reservoir rocks of the Zyrianov deposits in the
Altai Mountains. Izv. AN Kazakh.SSR. Ser.geol.no.3:70-85 '57.
(Altai Mountains--Ore deposits)

SRELYGIN, A.Ye., kand.geologo-mineralogicheskikh nauk

Alteration of rocks in the Chinasylsay deposit. Sbor.nauch.
trud.KazGMI no.18:268-294 1959. (MIRA 15:2)
(Trans Ili Ala Tau Ore deposits)

SHLYGIN, A.Ye.

"Completely mobile surplus component" in D.S.Korzhinskii's theory
of metasomatic zoning and equiponderant conditons governing
metasomatism. Izv. AN Kazakh. SSR.Ser.geol. no.1:98-108 '62.
(MIRA 15:5)
(Metasomatism) (Korzhinskii, D.S.)

KAYUPOV, A.K.; NIKITINA, L.G.; SHLYGIN, A.Ye.

Alteration of enclosing rocks of the Paryginskoye deposit
(Rudnyy Altai). Izv. AN Kazakh. SSR. Ser. geol. no. 1:40-51
'62. (MIRA 15:5)
(Altai Mountains--Petrology)

ZHUKOV, Pavel Konstantinovich; KAZANIN, Yuriy Ivanovich; KAYUPOV, Arykhtay Kayupovich; MURSALIMOV, Khakim Ibragimovich; FIGULLEVSKIY, Nikolay Arsen'yevich; SHLYGIN, Artem Yevgen'yevich; Prinimali uchastiye: BAYKENEV, Sh.A.; BAYNAZAROVA, G.; SERIN, Ye.S.; KRIKUNOVA, N.P.; SHUKHOV, N.N.; BOK, I.I., akademik, otv. red.; NESTEROVA, I.I., red.; ALFEROVA, P.F., tekhn. red.

[Basic features of the geology and metallogeny of the Koksutekeli area of the Dzungarian Ala-Tau] Osnovnye cherty geologii i metallogenii Koksutekeliiskogo raiona Dzhungarskogo Alatau. Alma-Ata, Izd-vo Akad. nauk Kazakhskoi SSR, 1962. 123 p. (MIRA 15:11)

1. Institut geologicheskikh nauk (for Zhukov, Kazanin, Kayupov, Figulevskiy, Shlyginin). 2. Yuzhno-kazakhstanskoye geologicheskoye upravleniye (for Mursalinov). 3. Akademiya nauk Kazakhskoy SSR (for Bok).

(Dzungarian Ala-Tau—Geology, Economic)

KAZANIN, Yu.I.; FIGULEVSKIY, N.A. [deceased]; SHLYGIN, A.Ye.; ZHUKOV, P.K.

New data on fold structures of lower Paleozoic ore enclosing
formations of the Dzungarian Ala-Tau. Izv. AN Kazakh SSR Ser.
geol. no.4:8-18 '59. (MIRA 15:4)
(Dzungarian Ala-Tau—~~Folds~~ (Geology))

IVANOV, A.I.; MOROZOV, V.D.; SHLYGIN, A. Ye.

Preliminary remarks on the age of Hercynian granitoid intrusions
in the northern and central Dzungaria. Metod. spr. abs. vozr.
geol. shr. no. 6:3-10 '64 (NIRA 18:2)

114

CA

Excretion of enterokinase in the feces of the dog. G. K. Shlygin. *J. Physiol.* (U.S.S.R.) 32, 523-9(1946)(in Russian). To det. the metabolic fate of enterokinase, S. investigated the activation of inactive trypsin by aq. CHCl₃ exts. of dog feces. Even dild. exts. had a considerable activating power. A substance of great activating power was obtained from these exts. by pptg. the ext. with alc. and drying the ppt. with ether. The properties of this factor lead S. to believe that the activity is due to the presence of enterokinase in the feces. The concn. of enterokinase in the intestinal juice was much less than in the feces. Preliminary expts. in other animals and in man indicate that considerable amts. of enterokinase are present only in the feces of carnivorous animals. H. A. Wegner

ASAC-SLA METACOLOGICAL LITERATURE CLASSIFICATION

CA

New phosphatase test method. G. Shlygin and S. Mikhlin (Nutrition Inst., Moscow). *Molokozhaya Prom.* 10, No. 10, 26-7(1949).—If Na phenolphthalein phosphate is used as substrate, the enzyme liberates its own indicator. A 2-ml. milk sample, 1 ml. soln. of 0.1% phenolphthalein phosphate (Na salt) in N ammonia buffer of pH 9.8, and 3 drops CHCl₃ are incubated at 37° and appearance of red color shows phosphatase activity. The test requires 0.5-24 hrs. G. M. Kosolapoff

SHLYAN, G. K. and NIKOLAI, A. Y.

Simple qualitative determination of phosphatases in milk as a test of efficient pasteurization *Igiene e Sanitaria* 1950, 1 (36-41)

Among the enzymes of milk it was found that phosphatases are the only ones which undergo complete inactivation when exposed to the conditions of the process of pasteurization. For practical purposes 2 ml. of the milk under examination is mixed with 1 ml. of buffer solution (0.1% of sodium phenolphthalein phosphate in normal solution of ammonium buffer with a pH of 9.8) and 3 drops of chloroform (as an antiseptic). The total is left in a thermostat at 37-38 °C. for 30 minutes to 24 hours. The milk is well pasteurized if a red colour does not develop. The explanation of this reaction is as follows. The phenolphthalein phosphate is colourless in alkaline solution. The phosphatase frees phenolphthalein from phosphate and the former in alkaline solution colours the tested milk red. Inactivation of phosphatase (test of good pasteurization) does not free the phenolphthalein and leaves the colour unchanged. Collis (World Medical Abstracts)

30: Medical Microbiology & Hygiene Section IV Vol. 3, No. 7-12

CA

11A

Measuring the amount of enterokinase. G. K. Shlygin (Nutrition Inst., Acad. Med. Sci., Moscow). *Biokhimiya* 15, 509-10 (1950); cf. Kunitz, C.A. 33, 7320. —The rapid activation of crude tryptic material in the course of a few min. can be regarded as the specific effect of enterokinase. At the present time, no other substance is known which can accomplish this rapid action in a neutral or alk. medium. Casein is clotted by a pancreas trypsin prepn. in the presence of a minute quantity of enterokinase; the small amt. of trypsin formed is insufficient for the digestion of the casein, but sufficient for the activation of the chymotrypsinogen contained in the same prepn. The chymotryptic activity of the mixt. predominates over the tryptic activity, and the casein is clotted. In the presence of large amts. of enterokinase, the casein is digested without clotting. One unit of enterokinase is that amt. which is just sufficient to digest casein without clotting it. Complete details of the method are given. The human duodenum contains 1000-3000 units, and the duodenal juice 650-1500 units. The enterokinase in dog excrement amts. to 450-670 units, but human feces contain only 0-10 units of enterokinase. H. Priestley

Lab. of Digestion, Dept. Physiol. & Biochem. of Nutrition, AMS USSR
Moscow

1951

CA

11A

Kinasogen, the precursor of enterokinase. (I. K. Shlygin (Nutrition Inst., Moscow). *Biokhimiya* 16, 497-510

(1951).—The free enterokinase from the dry mucous membrane of dog intestine can be removed by extn. with water, leaving behind the kinasogen. The latter yields enterokinase when treated with pancreatic juice. Trypsin and other tissue proteinases transform the kinasogen into enterokinase. Pepsin, in the presence of lactic acid, destroys kinasogen, but is without effect on enterokinase. Both enterokinase and kinasogen retain their individual properties after treatment with acetone, ether, and alc., but both are destroyed by 0.2% HCl. During digestion, the trypsinogen from the pancreas is activated in the intestine by free enterokinase. The free trypsin thus formed acts on the kinasogen, liberating enterokinase, which in turn activates new portions of trypsin.

H. Priestley

Lab. of Digestion, Dept. of the Physiology and Biochemistry of Nutrition, AMS

SHLYGIN, G.K.

New data based on the investigation of gastric secretion. Nov. med.
Moskva No. 22:36-43 1951. (CML 21:5)

SHLYGIN, G.K.

Ability of auto-activation of the pancreatic juice by various foods.
Fiziol.zh.SSSR 37 no.3: May-June 51. (CLML 21:1)

1. Laboratory of Digestion, Department of the Physiology and Biochemistry of Nutrition, Institute of Nutrition of the Academy of Medical Sciences USSR, Moscow.

FOMINA, L.S.;MIKHLIN, S.Ya.;SHLYGIN, G.K.

Method of determination of intestinal phosphatase. Biokhimiia,
Moskva 17 no.2:134-138 Mar-Apr 1952. (GML 24:5)

1. Laboratory of Digestion of the Institute of Nutrition of the
Academy of Medical Sciences USSR, Moscow.

SHLYGIN, G.K.

Secretion of intestinal ferments. Usp. sovrem. biol. 33 no.1:14-32
Jan-Feb 52. (CML 21:5)

1. Moscow.

FOMINA, L.S.; SHLYGIN, G.K., professor, zaveduyushchiy.

Effect of severing intestinal nerves on the secretion of enzymes. Vop.
pit. 12 no.3:22-32 My-Je '53. (MLRA 6:6)

1. Laboratoriya fiziologii pishchevareniya Instituta pitaniya Akademii meditsinskikh nauk SSSR (Moscow). (Digestive ferments) (Nervous system, Autonomic)

GELLER, G.M.; FOMINA, L.S.; SHLYGIN, G.K.

Evaluation of causes of Urov disease. Vop. pit. 13 no.4:47-52
Jl-Ag '54. (MLBA 7:7)

1. Iz Instituta pitaniya AMN SSSR, Moskva.
(OSTEOARTHRITIS,
*deformans endemica, causes, nutritional factor)

SHLYGIN, G.K.

✓ 2789. Simple method of assaying phosphatase in blood plasma. G. K. Shlygin and S. Ia. Mikhlin *Vop. med. Khim.*, 1955, 1, 461—468; *Referat. Zh. biol. Khim.*, 1956, Abstr. No. 13211. —A simple method of determining the activity of alkaline and acid phosphatase of blood plasma is described based on fermentative decomposition of *p*-nitrophenyl phosphate Na (I) to *p*-nitrophenol (II) which, in an alkaline medium, results in the soln. becoming yellow. (A) Assay of the alkaline phosphatase: to 3-15 ml. of cooled 0.9% soln. of NaCl is added 0.1–0.3 ml. of blood. The mixture is centrifuged for 15 min. at 2000–3000 r.p.m., and the amount of erythrocytes is noted. Dilutions are made from the plasma obtained. To each tube two drops of 0.3% MgCl₂ soln. and 0.5 ml. of buffered substrate soln. (0.45 g. I dissolved in 100 ml. 0.001 N-HCl) are added. By shaking up 3 times with ether the admixture of free II is removed from this soln. 1 ml. of ammonium buffer (pH 10) is added to 9 ml. of the test soln. and the mixture is incubated for 30 min. at 37°. The resulting colour is compared with a standard soln. of II. (B) Assay of the acid phosphatase: substrate I is dissolved in 0.1 ml. of acetate buffer pH 5.0. The free II is removed by ether. The blood or serum is dissolved in 0.9% NaCl soln.; and further soln. are prep. without adding MgCl₂. After (30 min.) adding 0.5 ml. of 0.4% substrate soln. to each test tube the incubated samples are made alkaline by adding 2 drops of 2 N-NaOH. The colour is compared with the standard soln. (Russian) med

I. L. PARKS

SHLYGIN, G. K.

✓ 2850. Importance of determining enterokinase and alkaline phosphatase for the assessment of the state of human intestines. G. K. Shlygin *Clin. chim. Acta*. 1956, 1, 421-433 (Inst. of Nutrition, Acad. of Med. Sciences of the U.S.S.R., Moscow, U.S.S.R.).

V. M. Wootton

SHLYGIN, G.K., professor (Moskva)

Significance of certain enzymatic indexes in evaluating
intestinal functions in man. Terap. arkh. 28 no.1:39-48 '56
(MLRA 9:6)

1. Iz laboratorii fiziologii pishchevareniya Instituta pitaniya
AMN SSSR (Moskva)

(GASTROINTESTINAL SYSTEM, metabolism,
enzymes as index of funct. (Rus))

(ENZYMES,
gastrointestinal, as index of funct. (Rus))

SHLYGIN, G.K., prof., BESSONOV, S.M., kand.tekhn.nauk

Nutrition problems in the World Health Organization. Vest.AMN SSSR
13 no.10:69-73 '58 (MIRA 11:10)

(NUTRITION,

problems in WHO (Rus))

(WORLD HEALTH ORGANIZATION,

nutrition problems (Rus))

SHLYGIN, G.K. (Moskva)

Specific enzymatic adaptability of the alimentary tract. Vop.
pit. 17 no.2:3-14 Mr-Ap '58. (MIRA 11:4)

1. Iz laboratorii Fiziologii pishchevareniya Instituta pitaniya
AMN SSSR, Moskva.
(GASTROINTESTINAL SYSTEM, physiology
specific fermentative adaptability (Rus))

SHEGIN, G. A. (USSR)

"Production of Lipotropic Substances by the Small Intestine."

Report presented at the 5th Int'l. Biochemistry Congress,
Moscow, 10-16 Aug 1961

SHLYGIN, G.K.

Digestive tract and metabolism. Vop. pit. 20 no.5:3-12 S-0 '61.
(MIRA 14:10)

1. Iz laboratorii fiziologii pishcheyareniya (zav. - prof. G.K.
Shlygin) Instituta pitaniya AMN SSSR, Moskva.
(DIGESTIVE ORGANS) (METABOLISM)

SHLYGIN, G.K.; VASIL'YEVA, E.N.; NARODETSKAYA, R.V.

A lipotropic agent of the intestines. Dokl.AN SSSR 145 no.4:953-
956 Ag '62. (MIRA 15:7)

1. Institut pitaniya AMN SSSR. Predstavleno akademikom A.I.
Oparinyam.

(LIPOTROPIC FACTORS) (INTESTINES--SECRECTIONS)

SHLYGIN, G.K.; FOMINA, L.S.; PAVLOVA, Z.M.

Technique of determining lipase in the pancreatic juice and
duodenal contents. Vop. med. khim. 9 no.2:197-200 Mr-Apr '63.
(MIRA 17:8)

1. Laboratoriya fiziologii pishchevareniya Instituta pitaniya
AMN SSSR, Moskva.

SHLYGIN, G.K.

Enterokinase determination as a test for evaluating the state
of the intestine. Sovr. metod. v biokhim. 1:282-291 '64.
(MIRA 18:5)